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Fig. 1 shows the ray path of a binocular viewing device, with illustration of the most important optical components.

Fig. 2 shows the receiver channel according to Fig. 1 in side view.

Fig. 3 shows the block diagram for the electronic part of the device according to Figs. 1 and 2.

The principle of the invention is based substantially on the possibility of integrating several functions in one device, wherein the device has the handiness of binoculars, so it can be part of the permanent personal equipment of interested users. Preferably at least three functions are integrated into the device, namely the traditional binocular or telescope function, which allows direct viewing of an object, and further the high-accuracy distance measuring integrated into the viewing ray path and also as third function a direction indicator, likewise integrated in the device, the result of which, namely azimuth and elevation, is additionally projected into the viewing ray path. Distance and direction measuring can also be transferred to other devices or indicated on the outside of the device - visible to third persons.

Modular construction of the device means in the present case that the design of the device allows configuration as a monocular or binocular device and that the direction measuring apparatus can optionally be integrated into the device. The concept of the device allows adaptation of the respective grade of equipment corresponding to the desired purpose of use.

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As a preferred embodiment example to explain the invention, a binocular viewing device is described below, in which one of the sight channels is additionally used for the transmitter and the other for the receiver of the distance measuring apparatus. According to Fig. 1 it consists of a conventional binocular part with an objective lens 1, an inverting prism 2 for right-left imaging and an eyepiece 3. The second ray path likewise illustrated in the chosen embodiment example contains correspondingly a second objective lens 11, a second inverting prism 12 and a second eyepiece 13. In both ray paths the course of the visible light is indicated by double arrows S1 or S2. Where necessary, the optical faces involved are coated for the visible range and for the range of the test radiation used, in other words, e.g. in the infrared range.

A ray splitter 4 connected to the first inverting prism 2 and an IR receiver 5 are provided in the first ray path as additional elements. The ray splitter fades the test radiation used for the distance measuring out of the combined ray path, so this part of the radiation does not reach the first eyepiece 3, apart from a residual part which is not harmful to the eye. The arrangement of the ray splitter 4 is illustrated in Fig. 2 in side view. The boundary face between the ray splitter 4 and the inverting prism 2 is provided with a filter layer, which is transparent to the IR light used, yet reflects visible light, so the traditional action of the inverting prism for the visible light remains unchanged. The ray splitter 4 thus serves not only to separate visible and IR light, but also to protect the human eye from laser radiation.

In the second ray path, additionally to the conventional components, a transmitter 15 for transmitting infrared

measuring pulses and a second ray splitter 14, combined with the second inverting prism 12, are provided. The arrangement of the second ray splitter 14 corresponds in this respect to that of the first ray splitter 4 on the first inverting prism 2.

In the preferred example the IR light used has a wavelength of approximately 900 or 1,500 nm, depending on the type of laser used. The IR transmitter consists e.g. of a pulsed or modulated crystal or semiconductor laser, the transmitting capacity of which is chosen in such a way that it remains safely in the range which is easy on the eyes, but on the other hand spans the desired reach. This is achieved, if applicable, by a special method of signal evaluation, which is not the subject of this invention. In special cases, e.g. if the device is configured as a monocular viewing device, the ray path of the transmitter can also be guided outwards by a separate optic. In this case the receiving channel for the IR radiation is identical to that of the device described. Semiconductor lasers or flash-lamps can be used to pump the crystal laser.

The second ray splitter 14 ensures direct fading of the infrared radiation into the conventional inverting prism 12 in the direction of the second objective lens 11, with simultaneous fading of this radiation out of the visible branch S2 of the ray path leading to the second eyepiece 13. The IR radiation is transmitted in the direction of the object to be measured via the second objective lens 11. The radiation reflected from the object reaches the device via the first objective lens 1. From there it is conducted on to the first inverting prism 2 and from the first ray splitter 4 faded out

of the combined ray path and conducted to the IR receiver. By contrast with conventional distance measuring apparatus, charging the receiver with part of the transmitting pulse to establish the time zero point is not necessary, as corresponding improvements in switching technology are provided in the electronic part. These are substantially stabilising means which ensure that the directional pulse is always transmitted an exactly defined time delta t after the trigger pulse has been applied. This means that otherwise customary optical transverse connections between transmitter and receiver can be omitted.

The IR receiver 5 can in the simplest case consist of a photodiode. It can be integrated together with an amplifier to form a hybrid. Further integration to form an extended hybrid with the analog/digital converter is also possible.

Additionally to the conventional device an indicator 20 and a partially transparent mirror 21 for mirroring these indication values of the distance measuring apparatus and the direction measuring apparatus into the ray path to the eyepiece are provided. An auxiliary indicator 22 can be additionally provided on the outside of the device.